Navigation Economic Technologies Symposium 9-10 May 2003

Generic Characteristics of Corps Waterway Models

Generic Characteristics

- Waterway traffic
- Alternative modes
- Transportation rates/costs
- Delay cost
- Traffic-average delay relationship
- Demand for water transportation services
- Waterway traffic forecasts
- Alternative mode supply
- Systems modeling
- NED benefit measurement

Waterway Traffic

- Commodity-origin-destination triplets
- Aggregation

Alternative Modes

- Identify potential alternative modes
- Same origin-destination
- Least cost framework
- Not a multi-modal analysis

Transportation Rates/Costs

- Ultimate origins and destinations
- Actual rates or constructed costs
- Costing models

Delay Cost per Unit of Time

- Full cost vessel operating costs
- Commodity inventory cost
- Expressed as $/ton/hr or $/tow/hr

Traffic-Average Delay Relationships

- Nonlinear, lock-specific
- Queuing theory or simulation derived
- Captures all service and performance availability considerations
- Means of introducing with-project effects

Demand for Water Transportation Services

- Individual waterway movements are perfectly inelastic with respect to own price
- Willingness-to-pay defined by rate differential (alternative mode-water)
- Given cost of delay and rate differential, w-t-p to remain on water in face of increased congestion can be directly calculated

Waterway Traffic Forecasts

- Generated by various methods
- 50-year project life
- “Unconstrained” forecasts

Supply of Alternative Service

- P&G guidance, "*the without-project condition normally assumes that the alternative modes have sufficient capacity to move traffic at current rates unless there is specific evidence to the contrary*"
- Few investigations of alternative assumption

System Modeling

- Single site vs. systems analysis
- Systems analysis vs. systems study
- System boundaries

NED Benefit Measurement

- Models generate shipper optimal solutions
- Transportation cost savings